

CENTRAL INTELLIGENCE AGENCY  
INFORMATION REPORT

This material contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C. Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

CONFIDENTIAL

COUNTRY	Czechoslovakia	REPORT	
SUBJECT	1. Jan Sverma Plant of Motorlet in Prague-Jinonice 2. Branch Plant of Motorlet in Stars Beleslav	DATE DISTR.	24 February 1955 25X1
DATE OF INFO.		NO. OF PAGES	6
PLACE ACQUIRED		REQUIREMENT	
		REFERENCES	

This is UNEVALUATED Information

THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.  
THE APPRAISAL OF CONTENT IS TENTATIVE.  
(FOR KEY SEE SEVERE)

25X1

1. Production of new jet engine:

25X1

A new-type jet engine was to go into the first stage of production by 12 September 1953 at the Jan Sverma Plant of Motorlet National Enterprise in Prague-Jinonice.<sup>1</sup> Source believes that this engine was designed for a twin-engine aircraft. The new type would be of similar construction to the MIG 15 engine, but larger and more powerful. While the MIG 15 engine had the factory code number MO 5 (on all plans, workshop sketches, etc.), the new-type engine was coded as MO 6. The first six new MO 6 engines were supposed to be completed by the end of the year 1953. Assembly-line production was to start by the beginning of 1954. There was a lot of pressure and hurry to select skilled personnel and switch certain machines to the first-stage production of MO 6 and at the same time to make all preparations for the 1954 assembly-line production. For this the manufacturing of so-called "preparatory items" was of key importance.<sup>2</sup> Since the current production of MO 5 engines was to be continued, first-stage production of MO 6 was to start immediately, and furthermore the "preparatory items" for MO 6 assembly-line production were to be manufactured as quickly as possible, the burden on the plant capacity was too high. Therefore a large number of the "preparatory items" were ordered at the Machine Tool Factory in Turcansky Svaty Martin, Slovakia.<sup>3</sup> The other still considerable number of these items was to be manufactured in Motorlet. In spite of all plans, programs, and hurry source did not see any castings, forgings, or small parts of the MO 6 in the workshops in early September 1953.<sup>4</sup>

25X1

2. Bottlenecks in production<sup>5</sup>

The production of the MO 5 engine in Motorlet suffered from various shortcomings and bottlenecks from the very beginning. These could be divided into three categories: First, the plant had a limited number of skilled craftsmen. The craftsmen were all needed at routine work as foremen, machine settlers (adjusters), supervisors, and advisers of the unskilled worker ranks. Hence any switch of craftsmen to other jobs connected, for instance, with the introduction of new-type production or enlargement of current production immediately caused troubles and actually slowed down the current assembly-line production. Second, there was a permanent shortage of tools and special instruments (such as fine measuring instruments). The foremen and store-

CONFIDENTIAL

STATE	X	ARMY	NA	NAVY	X	AIR	NA	FBI	AEC				
-------	---	------	----	------	---	-----	----	-----	-----	--	--	--	--

(NOTE: Washington distribution indicated by "X", field distribution by "NA")

25X1.1

CONFIDENTIAL

25X1

- 2 -

keepers were constantly busy assigning them to and withdrawing them from the workers, and there were continual quarrels about which worker was more in need of a certain item. The instrument and tool situation was always tense, and any new-type production would require a new supply of instruments and tools as well as new machinery. Third, considerable bottlenecks developed from short supply or halt of supply of special materials. In 1953 such bottlenecks affected most strikingly the production of shafts and vanes as described below:

- a. Bottleneck in shafts production: The forgings for shafts were supplied by the Poldina Foundry in Kladno. The forgings were made of special Vitrix steel. The supply was going smoothly until about November 1952. [redacted] 25X1

[redacted] it had been the last shipment of shafts for the year 1952; the next shipment was to be expected in January 1953. The workshops finished all shafts in store before Christmas 1952, and beginning in January they had nothing to work on. At a meeting, workers were informed that shipment of shaft forgings was expected by 15 January, and therefore the line of shafts was temporarily stopped, workers being assigned to another, substitute (rather unimportant) job. However, the forgings did not come in January 1953 nor at the beginning of February, and the workers started to murmur and protest at the routine meetings, since by the substitute work they earned substantially less than on a qualified job such as shaft production. They were calmed down by the factory manager, who assured them that the forgings shipment was already on its way. But in fact the new shipment arrived only at the beginning of April 1953. The delay was exactly three months. With the new supply a real turmoil occurred. Some workers had to work 16 hours daily to catch up. But soon, in fact at the very first operation, it became evident that the new forgings were of defective material, since they were much easier to machine. When the first 50 shafts were completed and underwent chemical testing, it was found that the material had numerous cracks. All 50 shafts had to be thrown away. Some defects were found also in the next shipment, but finally the forgings were again all right. However, certain changes in the material were noticeable on the shafts, ball pivots, and traction bolts, all these originally from Vitrix. Also the material of blowers was changed. Originally the blowers were made of light alloy with aluminum. When some new alloy was used, the first 50 blowers had to be rejected because their vanes were cracking at the last stage of the operation (at bending). All improved with the next shipment. Nevertheless source thinks that the resistance of the material was worsened by these changes.

25X1  
25X1

- b. Bottleneck in rotor-blade production: By 1 June 1953 the line of blades for turbine rotor production was halted. [redacted] 25X1  
the halt was caused by the shortage of cobalt. Later on [redacted] it 25X1  
had been decided to continue the production of rotor blades with a lesser amount of cobalt. This would shorten the lifetime of blades, but plans were made to exchange the blades of rotors more often. Pertinent instructions had to be included in the maintenance regulation. However the blades production had not been resumed as of September 1953. It looked as if cobalt was lacking even for the production of substitute blades.

3. The effect of the 1953 bottlenecks on the production of MO 5 engines was quite apparent. Whereas the normal capacity of the plant would allow production of about six MO 5 engines daily, by July 1953 the output was hardly three engines per day. At the same time the shortage of important ingredients such as cobalt and emergency changes in materials such as special steel and alloys worsened also the general quality of the products. This certainly affected unfavorably the performance of MO 5 engines. A considerable number of MO 5 engines were manufactured for and shipped to the USSR. The Soviets were informed of the shortages but apparently were not able to provide the ingredients needed. They were also aware of the worsened quality of the engines.

4. MIG 15 engines produced outside Czechoslovakia:

In 1952 [redacted] MIG 15 engines were manufactured also in the USSR, Poland, 25X1  
and Hungary. Later [redacted] their production in Hungary was cancelled, because 25X1  
the Hungarian plant was allegedly incapable of coping with high metallurgical and  
machining requirements. [redacted] 25X1

[redacted] In addition to 25X1  
[redacted] manufacture of engines, Motorlet overhauled and repaired both its own MO 5 engines 25X1

CONFIDENTIAL

CONFIDENTIAL

- 3 -

25X1

and MIG 15 engines of Soviet manufacture. [redacted] 25X1

[redacted] The center of the gear was of 22 mm. diameter. Permitted tolerance was plus/minus 5/100. Overdosing the tolerance on the Czech engine by more than 5/100 was subject to investigation by the control commission and could lead to a penalty. At the repair or overhaul job the gear center could be ground to a maximum of 22 mm. minus 13/100. That was possible on the Motorlet MO 5 rotor gear. But when overhauling or repairing the same on the Soviet engine [redacted] the difference [redacted] minus 3/10. By the Motorlet standard and technical regulation this difference would be considered to make the part defective. [redacted] 25X1

[redacted] There was much discussion among workers, foremen, and even technicians about the quality of Soviet engines and all agreed that the engines of Soviet origin were far behind the Motorlet products even with all their own (Motorlet) shortcomings taken into account. 25X1

5. Testing of MO 5 engines: Finished MO 5 engines were originally tested (broken in) in Motorlet. Early in 1953 a new testing station was completed near Stara Boleslav, and finished engines have been shipped there since then. The testing station has several underground chambers, so that noise of engines is damped. Ten engines can be tested simultaneously. The location of this testing station is as follows: Following the highway from Prague beyond Brandys nad Labem (Mlada Boleslav- Liberec), about 20 kilometers northeast from Prague, the testing station is in woods, about one kilometer from the small town of Stara Boleslav, about 500 meters northwest of the highway. The place is connected with the main highway by a one-half kilometer solid concrete road and is not distant from the railroad station Brandys nad Labem on the line from Melnik to Lyss nad Labem. The whole area is fenced and is guarded by the Army.

6. After the testing the MO 5 engines are shipped to various customers:

- a. Czech Air Force: A certain number of MO 5 engines are sent to the Rudy Letov Aircraft Factory in Prague-Letnany where they are built into MIG 15 planes produced by the same factory. Then the aircraft are flown to the jet-testing airfield at Panenske Brezany (O51/F70) near Prague for test flight. Afterwards they are taken over by the Czech Air Force.
- b. USSR: Certain numbers of MO 5 engines are shipped to the USSR. In 1952, when the motors were still tested (broken in) at Motorlet, they were shipped to the USSR straight from the plant. They were packed into massive cases 2.5 meters x 3 meters x 3 meters and marked in 10-centimeter capitals in Cyrillic lettering. They were packed in the Motorlet shipping department and carried away by large trucks. Since 1953 the tested motors have been shipped to the USSR directly from the testing station.
- c. Shipment to North Korea: In 1952 manager Cingros (fnu) told workers at a meeting that each engine produced by Motorlet would be of great help to the comrades in Korea. At about the same time a North Korean delegation spent several days at the plant and inspected the production there. [redacted] 25X1

25X1

7. Supervisors of production in Motorlet:

The plant is supervised by a group of Czech Air Force officers. They have their own office at the plant (in the concrete building)<sup>7</sup>. At the inspection or during testing of finished components these officers were usually accompanied by a few civilians. Source was not able to learn the nationality of these civilians.

8. Construction of underground halls: Underground halls have been under construction since 1953 on Cerny vrch (Black Hill) in Prague-Kosire (see annex). By September 1953 the work was not yet completed, though day and night work shifts could be observed. The construction was hidden behind a high board fence and was off limits. However, the place could be observed from a certain distance. The entrance is from Vrchlického ulice, opposite a cemetery (Malostranský hřbitov). [redacted] 25X1

[redacted] there were persistent rumors that Motorlet would be moved into the underground halls in case of war. There were no signs of any production or manufacture being started or going on in the installation. A villa on Cerny vrch is occupied by a group of soldiers who execute day-round guard duty on the roof. 25X1

CONFIDENTIAL

CONFIDENTIAL

- 4 -

25X1

They have one antiaircraft machine gun.

25X1

1. Comment: First-stage production means that all parts (components) of a new-type engine are manufactured individually by skilled specialists according to plans (designs, sketches) without so-called "preparatory items" (see below Comment 2). Contrary to it, assembly-line production means automatic production where all workers of the factory can participate, since each has a very limited job operation on a specific part. For this he is provided with a corresponding "preparatory item" with which he works or which is fixed on his lathe, adjusted for that special but automatic operation.

25X1

25X1

25X1

25X1

2. Comment: Before the assembly-line production could be started, the machine and workers must be provided with "preparatory items" and tools. For nearly every part or component of the new-type motor there would have to be a corresponding preparatory item. If the part or component has to undergo several machining operations, then there must be another preparatory item for each operation. There are many hundred, even thousands, of preparatory items for production of a jet motor. They include fixtures, jigs, jaws, etc. Preparatory items are stored in a preparatory items store. Before beginning a new operation each worker has to ask the foreman for the pertinent design on which the necessary tools and preparatory items for the operation are listed. Tools are listed as: Knife No..., Screw tap No..., whereas preparatory items have no names but only numbers; for instance Preparatory Item No... The worker has to pick up the preparatory items and tools at the store and after completing the operation or shift he must return them to the store.

25X1

3. Comment: some such items might have been in

25X1

4. Comment: some such items might have been in store, as rough forgings and castings were supplied from outside metallurgical work. the first-stage production of MD 6 could have started by or about 12 September.

25X1

25X1

25X1

25X1

25X1

From 12 September until 31 December 1953 there were about 90 working days (excluding Sundays and Christmas). The first-stage production (without preparatory items) depends solely on skilled specialists and craftsmen, whose number is limited. The majority of plant workers are retained people from other civilian jobs (white-collar workers, waiters, etc.). They are without special skills and can be used only in the assembly-line work. So, even if the management offered extra pay for overtime shifts to the skilled craftsmen (as they did in emergencies) the time until Christmas was very short. rather by the end of January or in February 1954 the first six MD 6 could have been completed if some other bottleneck did not develop in the meantime. As for the assembly-line production of MD 6 engines, it could not have started by the beginning of 1954. First of all, he takes it for granted that the preparatory items could not be ready by the end of 1953, even though many of them were ordered in Tarcansky Svaty Martin. To manufacture preparatory items, again only foreman and skilled craftsmen can do the job. But most of the craftsmen are badly needed as machine setters or adjusters at the routine work and to supervise and advise the ranks of unskilled workers. Without that there would be numerous defects and difficulties. Therefore not many skilled craftsmen could be switched to a special job. Second, the plans, sketches, and processes must be worked out for each machine and worker. Third, many new instruments had to be provided. There was a constant shortage of them even for the current production lines. Above all, the new MD 6 production would definitely require supply and installation of additional machinery. This was already planned (three new halls were constructed), but there was no indication yet when and from where the new machinery would come.

25X1

25X1

25X1

the assembly-line production of MD 6 could not have started earlier than sometime in June-July 1954. even if the assembly-line production of MD 6 should have been running by June or July 1954, still some preparatory items would have been missing and some of the operation would have had to be done by handwork of craftsmen.

25X1

25X1

25X1

25X1

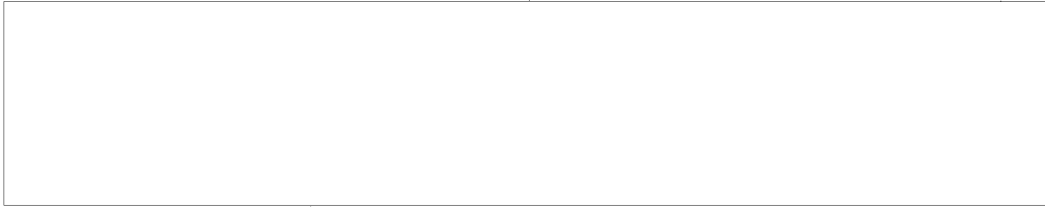
in 1953 some special preparatory items did not yet exist and several operations therefore had to be done by handwork, though the production of MD 5 was already in its second year.

CONFIDENTIAL

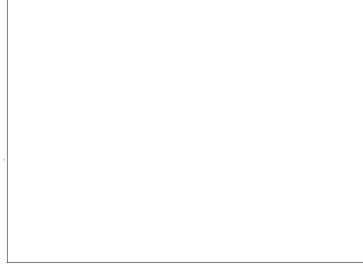
25X1

~~CONFIDENTIAL~~

- 5 -



Underground halls under construction at Cerny Vrch,  
Prague-Kosire.



25X1

25X1

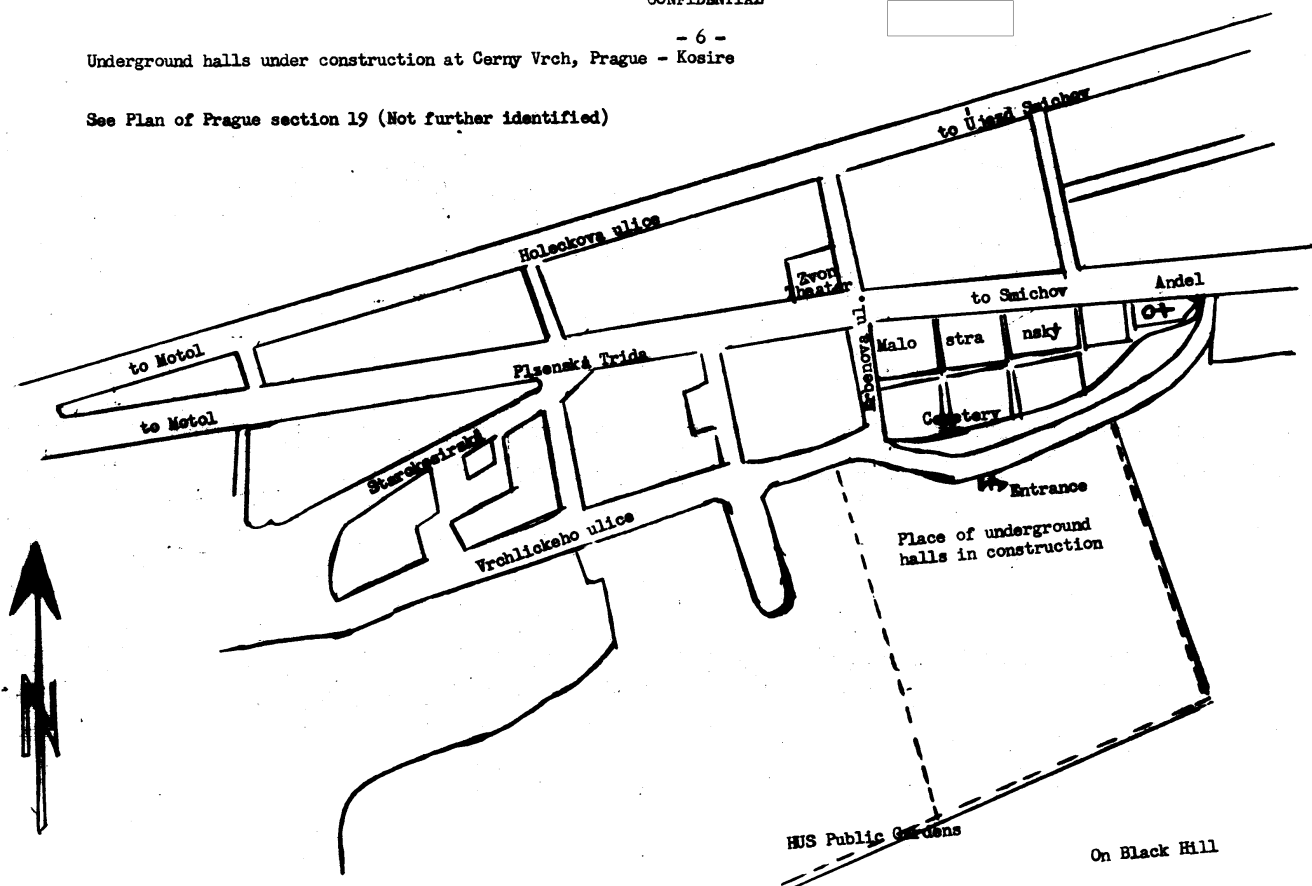
~~CONFIDENTIAL~~

- 6 -

Underground halls under construction at Cerny Vrch, Prague - Kosire

See Plan of Prague section 19 (Not further identified)

25X1



CONFIDENTIAL